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SOUTHERN FOREST EXPERIMENT STATION

E. L. Demmon, Director

New Orleans, La.

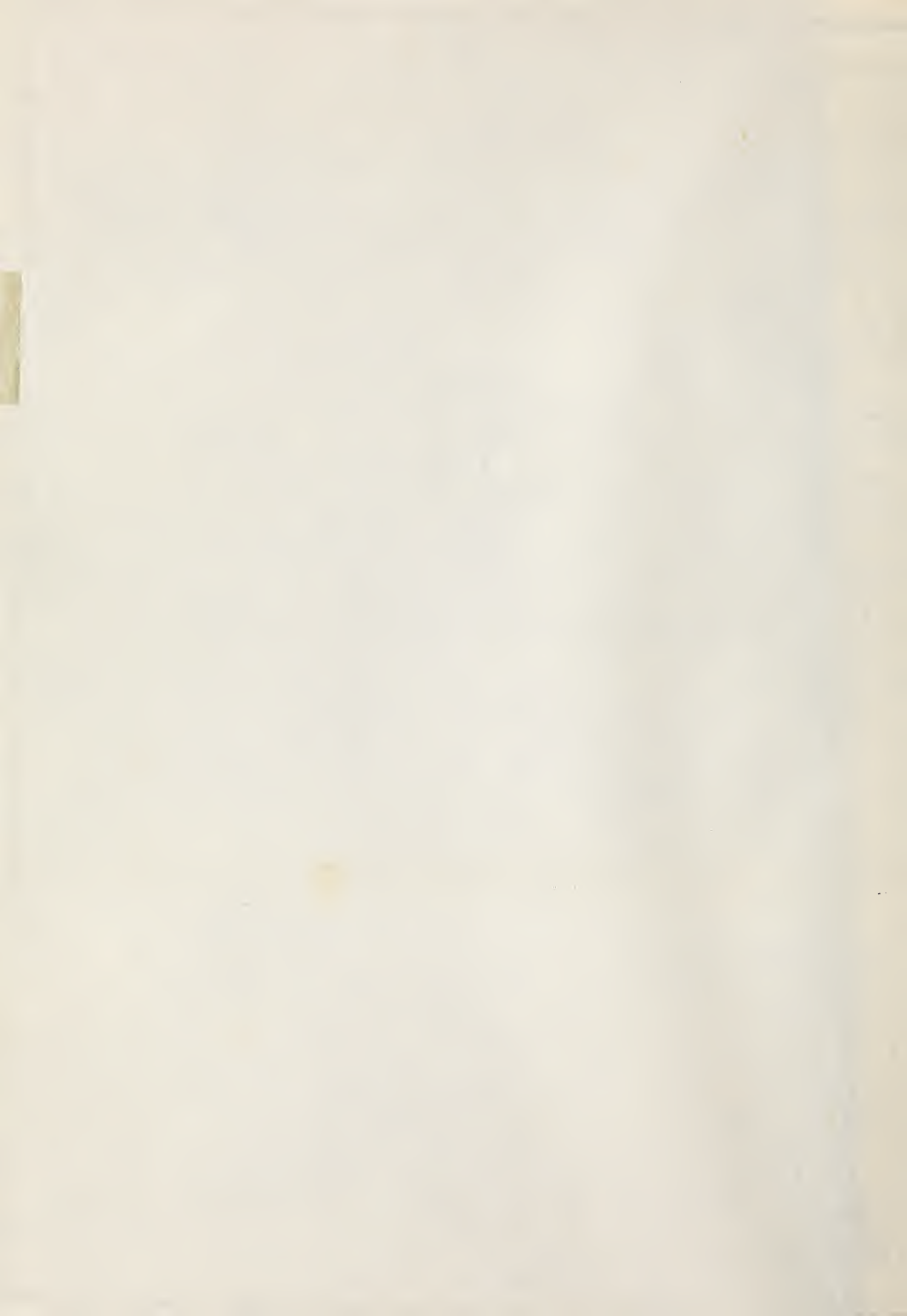


THE PLACE OF FORESTS IN A LAND-USE PROGRAM FOR THE SOUTH

By

Robert K. Winters, Forester

This paper releases data gathered in current investigations at the Southern Forest Experiment Station, and is subject to correction or modification following further investigation.



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By Robert K. Winters, Forester,
Southern Forest Experiment Station.

In a recent Associated Press dispatch^{2/}, I. W. Duggan, Assistant Southern Director of the Agricultural Adjustment Administration, is reported to have said that land in the cotton-growing area of the United States was only 74 percent as productive as the Nation's average soil, and that, although 34 percent of the Nation's farm population lived in the area, they received only 21 percent of the national farm income. In this statement, attention is fixed on the three primary elements in our knotty rural socio-economic problem: people, income, and land. Mr. Duggan implies that too many people in the South are producing too small an income because they are trying to raise on a large aggregate area of poor land a crop for which no adequate market exists. I know that some competent agricultural economists feel that, under efficient practices, half the farm people in the South, working half the present area of tilled land, could meet all our domestic and export needs for the products of southern agriculture and thereby double their present individual family income. Be that as it may, we now have all the people, and they are on all the tilled land. Our problem, therefore, is to give them the maximum purchasing power and the best possible living conditions while fundamental changes are being made. To do this we can, it seems to me, strive toward two specific objectives: (a) to make the land produce continuously the maximum net cash income consistent with the long-time public interest, and (b) through such production to supply the maximum opportunity for employment.

The agricultural possibilities of land use under present practices are well known, both with respect to cash income for the owner and with respect to opportunities for employment of labor. Less well known are the possibilities for employment and continuous cash income from southern lands when devoted to the cultivation of timber. It is with these latter possibilities that I wish to deal in the following pages. Although forest land offers opportunities for income from hunting, trapping, recreation, and other rights, I shall confine myself to income from immediate products of forest trees.

My data are, in part, those gathered by the Southern Forest Survey of the United States Forest Service, an activity of the Southern Forest Experiment Station with headquarters in New Orleans, La. To obtain a true picture of the supply of timber and other forest products in 1934, our survey crews took to the woods and on foot gridironed the entire South on compass lines 10 miles apart run from the Atlantic Ocean to the plains of Texas (see fig. 1). At 660-foot intervals along these lines, field crews established sample plots and classified the land as forested, cultivated,

^{1/} Address delivered at the meeting of the Association of Southern Agricultural Workers, Nashville, Tenn., Feb. 3, 1937.

^{2/} The Times-Picayune, New Orleans, La., page 11, Jan. 22, 1937.

recently cleared for cultivation, recently abandoned from cultivation, marsh town, right-of-way, etc. On each forest plot, trees were counted, classified as to kind, and measured with respect to height and stem diameter; also, growth rates were determined by means of an increment borer, and all other data needed to determine stand volume and timber growth were gathered.

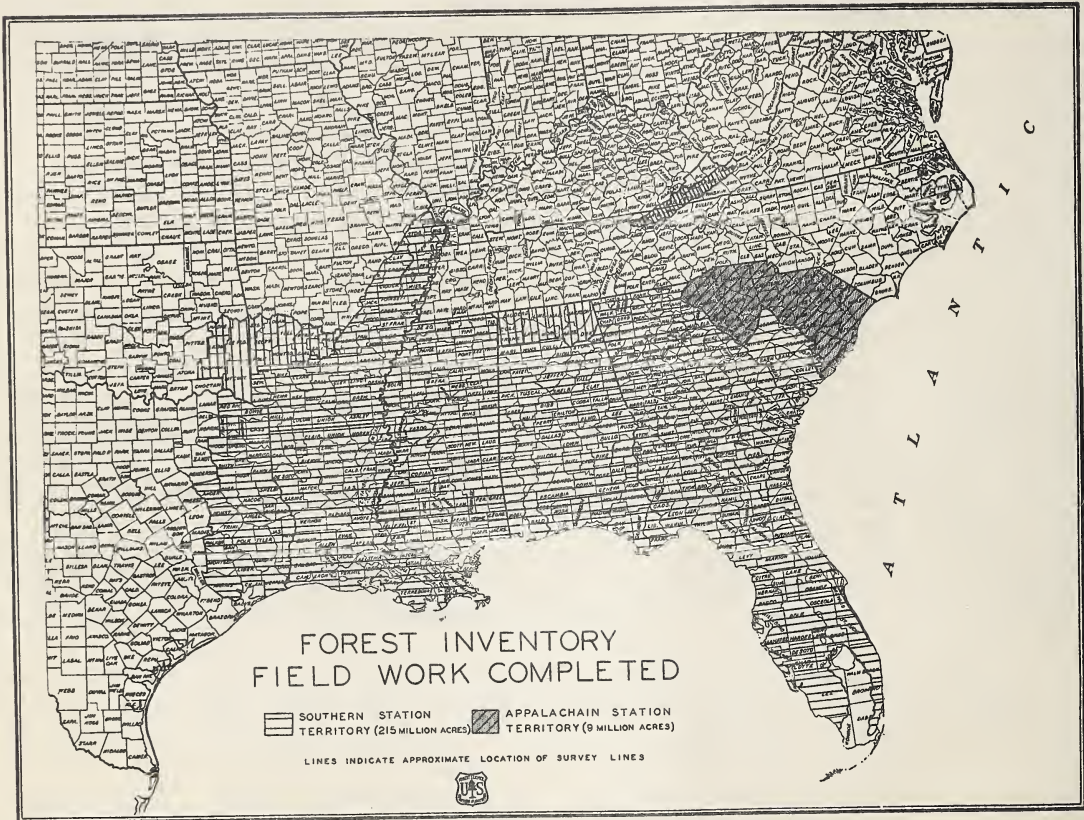


Figure 1. - Forest Survey lines covered the South from the Atlantic Ocean to the Great Plains

Figure 2 presents graphically the results of an analysis of Survey land-use data. On this chart the South has arbitrarily been divided into a number of units, whose boundaries are shown. In each of these units is a circle whose diameter is proportional to the total land area of the unit in which it occurs. The black portion of each circle represents the forest area in the given unit; the grey portion represents the area in agriculture; and the white represents the land area in other uses.

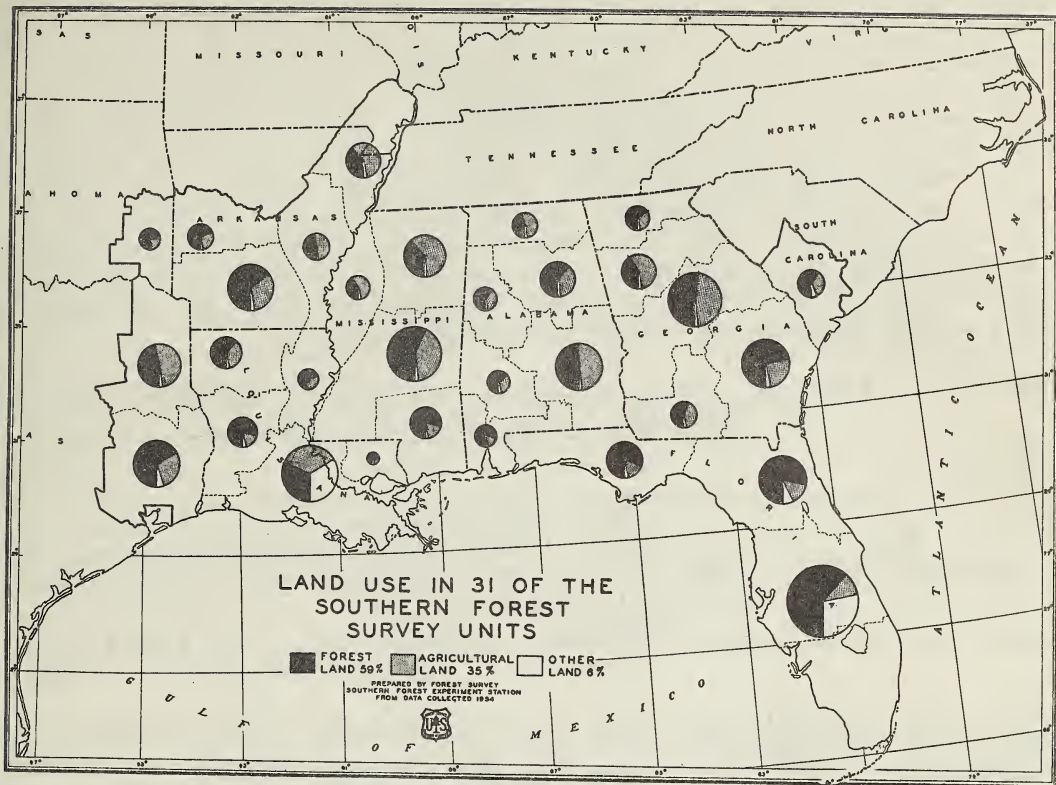


Figure 2. - Land use in the South

The predominance of forest land, shown in black on the map, is impressive, particularly along the Atlantic and Gulf Coasts. Of the 31 units shown, only 9 have less than 50 percent of their land area in forest growth and 4 of these lie in the highly agricultural Mississippi Delta region. The large areas of marsh in south Louisiana and south Florida are chiefly responsible for the increased size of the white portions in the circles representing these units.

Considering the South as a whole, the area of forest land is nearly one and two-thirds times the area of agricultural land. Furthermore, analysis of our data shows that land is being abandoned for cultivation nearly three times as fast as new land is being cleared for agriculture. Thus, as long as present trends continue, the area of forest land can be expected to increase in the South.

What can this forest land contribute in the way of cash income to land-owners and employment to labor? An answer to the first part of this question is given in table 1, where income data on four distinct kinds of forest ownership are presented. These forest incomes are based on a timber cut that does not exceed the growth, and represent, I believe, the average that is being obtained in similar sawtimber-size stands on millions of acres throughout the South without fire protection, cultural operations, or the application of other forest-management practices. These incomes represent, in effect, what the woods can do for themselves without the aid of man and sometimes in spite of him. Needless to say, these incomes can be greatly increased by building up the growing stock through a reduction in the mortality loss and through an acceleration in the growth as a result of improved selection of trees to be cut, and by improving the timber-marketing practices.

Table 1. -- Appraisal value, net annual earnings, and income as a percentage of investment for second-growth timberland

Type of ownership and of timber	Land value (i.e., without timber)	Value, land and timber	Gross annual returns per acre	Operating cost	Net annual returns per acre	Net annual income
			Dollars			Percent
Small farm - loblolly pine	3.00	8.00	<u>1</u> /0.90	<u>2</u> /0.16	0.74	9.2
Small farm - bottomland hardwood	3.00	10.00	<u>3</u> /0.49	<u>4</u> /0.16	0.33	3.3
Large commercial - short-leaf-loblolly	3.00	16.00	<u>5</u> /1.19	<u>6</u> /0.30	0.89	5.6
Large commercial - naval-stores	3.00	11.00	<u>7</u> /1.29	<u>8</u> /0.35	0.94	8.5

1/ Based on a continuous annual growth of 257 bd.ft. (International $\frac{1}{4}$ -inch rule) at \$2.82 per M bd.ft. and 0.36 cord (4 x 4 x 8 feet) at 50¢ per cord.

2/ Based on 15¢ per acre for taxes and 1¢ per acre for fire suppression.

3/ Based on a continuous annual growth of 175 bd.ft. at \$2.10 per M bd.ft. and 0.5 cord at 25¢ per cord.

4/ Based on 15¢ per acre for taxes and 1¢ for fire suppression.

5/ Based on a continuous annual growth of 174 bd.ft. at \$5.85 per M bd.ft. and 0.34 cord at 50¢ per cord.

6/ Based on 15¢ per acre for taxes, 5¢ per acre for fire protection, and 10¢ per acre for administration costs.

7/ Based on an integrated continuous use of timber for naval stores, lumber, poles, piles, and pulpwood.

8/ Based on 20¢ per acre for taxes and 15¢ for fire protection and administration.

The small-farm ownerships represent the average of some 660,000 acres of second-growth sawtimber in the loblolly pine type in eastern Texas. The small-farm owner usually has 40 or more acres of woodland adjacent to his farm land. Oftentimes he does not recognize the value of his timber, and in times of financial difficulty markets his forest products to poor advantage. As a result, he realizes less per thousand board feet of timber sold than his timber is actually worth. In this example, the values of standing timber and annual timber growth are based on a price of only \$2.82 per thousand board feet of lumber; in many parts of the South, timber of comparable size and quality is being bought for this price. This farmer's administrative expense can be considered as nil and his fire-protection cost practically so. On this basis, and by cutting only the growth, he realizes 74¢ per acre net or more than 9 percent on the land and timber value. Figure 3 shows a stand of second-growth pine in eastern Texas similar to the average upon which this income calculation was based.

The incomes and values for the small-farm owner in the southern bottom-land hardwood type, where growth is somewhat less than in the pine type of eastern Texas, are representative of second-growth sawtimber-size river-bottom hardwood stands anywhere in the South except in the Mississippi River Delta, where land values and taxes are generally higher than shown here. This kind of owner also frequently underrates the value of his timber and during times of stress or in emergency sells it for less than its real value. Accordingly he earns 33 cents net per acre or 3.3 percent on his total investment in land and timber.

The incomes and values for the large commercial ownership in the loblolly-shortleaf pine region are based on some 300,000 acres of second-growth sawtimber-size pine in Arkansas. In this case the owner is assumed to know the actual market value of his timber and to be in a position to market it most effectively. His net annual income per acre is 89 cents or approximately 5.6 percent of the value of his land and timber.

The large commercial ownership of the naval-stores pine type in Florida shows a net annual return of 94 cents or 8.5 percent on the combined value of land and timber. This is typical of many thousands of acres of second-growth longleaf and slash-pine timber, worked for the gum from which turpentine and rosin are derived. This income is based on the full use of the trees for naval stores before selling the completely worked timber for such uses as poles, piles, lumber, and pulpwood.

May I emphasize again that these are yields from second-growth sawtimber-size stands as they now exist. At present these stands are understocked particularly in the larger size-classes; in general they are not protected from fire, nor are they being cut in such a way as to insure maximum timber growth. If they were fully stocked and were properly cut, and if the products were effectively marketed, net money yields per acre would reasonably be expected to double or treble, assuming present market conditions. On the average, as a result of improvement in management, hardwood stands can be expected to show a relatively greater increase in money yield than pine.

And now, what opportunities does forest land offer for employment? According to Survey studies of forest employment in the South, approximately three-fifths of a man-day of labor can be provided each year through the cutting and manufacturing of the growth on an average acre of second-growth

forest land such as we have been discussing. This employment includes work in the woods, cutting timber for any kind of industrial use; it also includes the labor involved in all transportation of commercial logs, bolts, billets, and cordwood, except that on common-carrier railroads and barge lines. Furthermore, it includes the employment provided by mill- and office-work in such primary forest industrial plants as sawmills, pulp and paper mills, veneer and stave plants, creosoting plants, and destructive-distillation plants.

What, in brief, does the forest mean to an area such as a State or portion of a State? In southeastern Texas, for example, are some 4,900,000 acres of pine timberland. Some of it is now growing sufficient timber to produce a net annual income of 74 cents per acre, and we can safely say that, if restocked and protected from fire, all of it could produce equally well. In this region, approximately 1,170,000 acres of hardwood land is, or can be, producing 33 cents per acre. This pine and hardwood forest area is, therefore, capable of producing approximately \$4,000,000 net income per year. Three-fifths of a man-day of labor in forest industries per acre of forest land per year is equivalent to more than $3\frac{1}{2}$ million man-days of labor per year. At \$1.25 per man-day, this represents about $4\frac{1}{2}$ million dollars. Under present economic conditions and with but slightly improved forest-management practices, somewhat over 6,000,000 acres of forest land could bring in more than $8\frac{1}{2}$ million dollars annually through the sale or use of trees on the stump and through the labor involved in the harvesting and primary manufacture of products therefrom.

And now, to relate all of this to people, income, and land, the three primary elements of our problem as outlined by Mr. Duggan. Apparently he has been thinking in terms of salvation for the rural South through a crop-controlled and otherwise rejuvenated agriculture. Unquestionably, agriculture now is, and probably always will be, the mainstay of the rural population of the South. Nevertheless, Southern farmers, by caring for their forests, by properly harvesting their own woodland products, and by part-time employment on commercial forest land, can materially increase their yearly cash income. Approximately 59 percent of the land area in the South supports a forest growth nearly all of which is capable of producing a net annual income of as much as 75 cents or \$1.00 per acre, and about 35 percent of this forest area is in farm woodland. That the Southern farmer is already very much in the timber business is further indicated by the fact that more than 40 percent of the total farm area in the South is growing a timber crop.

The people of the rural South have in their extensive forests a resource that grows and that furnishes income both through the sale of products and through the labor involved in their marketing and manufacture. Properly handled, these forests can and will play their full share in the solution of our perplexing rural problem involving people, income, and land.